Additional notes for Tanner lectures:

p.1. What is metaphysics – the nature ~~of~~ of its being principles governing existence – an a priori discipline.

2 the most general and pervasive features of the physical world – may be susceptible to experimental investigation (cf. the presuppositions of scientific investigation):

What do we mean by realism?:
Objects exist independently of our knowledge of them

Distinguish ontological question – is there a coherent idea – from the epistemological ~~[illegible]~~ question of how we could ever come to know about such objects – sense experience connects us with the world or separates us from it?

Distinguish also realism about particulars & universals.

Distinguish lack of certainty from lack of ~~[illegible]~~ any grounds at all for belief.

Distinguish knowledge as acquired by non-sentient experimental apparatus from knowledge as contents of our conscious subjective awareness of the results of an experiment

Some technicalities unavoidable – will keep to a minimum – cf Hawking's book – only one equation allowed – $E=mc^2$.

delete "done by my student", insert Clifton's wording.

p.8. What are positivists
1) sensationalists — Mach
2.) physicalists — Neurath
3.) protocol sentences — Schlick

p.13 What do we mean by structure?
cf What is a field with what are the field equations governing its behaviour

p.18 [length] · is determined by a three-place relation.

p.53 examples of Kuhn losses
a) perturbation theory
b) classical behaviour of macroscopic objects.

p.56 even for arbitrarily small δ - - - -

"At first flush one might be inclined to side squarely with Haeckel"
p.84 [Tautological core of questions raised here.]

Relevance of Godelean incompleteness results for a formal deductive account of explanation:
"But there is a sense in which the ~~answer~~ issue is not so straightforward. On any account of scientific explanation which depends on deduction in a formal axiomatic system we run into

✓ Weaker

* And intuitively, if simple adjustments
can produce empirical success
this is an indication that the
programme is tracking the truth.
Let me be clear,

limitations imposed by the famous Gödel theorem, that any first-order theory that can accommodate a significant portion of arithmetic is *necessarily* incomplete in the sense that it involves undecidable sentences, i.e. sentences whose truth-value cannot be calculated from the axioms of the theory. The notion of truth in such theories cannot be captured by axiomatization. This amazing result was quite unsuspected in the 19th century debates but does strike tellingly at the possibility of a "theory of *everything*", at a very fundamental level."

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p. 65 Put in a crisp ~~sol~~ slogan: To understand anything at a really fundamental level means we must understand everything, so how can we ever get started?

p.13 Of course to make this an *objective* criterion for assessing metaphysical research programmes we need an analysis of fertility which does not lead us back into subjectivism. This is undoubtedly related to the delicate notion of simplicity, - fertile programmes are ones which can be articulated successfully in a natural ~~i.e. simple,~~ way or uncontrived and 'simple' way*. ~~So~~ I am not proposing an uncontroversial solution to the underdetermination problem but just indicating what seems to me the most promising line of attack

* see notebook p. 2

✓ p.59

p.54 Of course discontinuities can be 'manufactured' by introducing ~~of~~ artificial properties. So if some function of the parameters p is continuous one can easily define a function of that function which is discontinuous. For example if f sends x to x^2 and so is continuous at $x=0$ and g sends x to $1/x$ then $g \circ f$ sends x to $1/x^2$ which is discontinuous at $x = 0$. So to get an objective measure of revolutionary changes in theory in terms of notions of mathematical discontinuity, we ~~must again~~ are up against the same difficulty we met in the first lecture when I discussed the problem of nominalism the problem of ruling out unnatural properties or predicates. ~~That~~ This type of problem is endemic in philosophy of science and I don't propose to offer a solution, but just to put down a marker ~~that~~ this is the sticking point where the property realist must ~~stick his heels~~: stand firm against the nominalist in defending that a theory is really about this property rather than that.

p.65

To put the matter in a crisp slogan: To understand anything requires us to understand everything. In order to produce a theory of Everything that goes behind the statistical predictions of orthodox quantum mechanics we must contemplate a great profusion of physical magnitudes that are [illegible] the hidden value principle. Of course in some states split characters may have the same values, so in the case where the QM state is factorizable ~~the~~ ontology of effective local ~~entities~~ particulars is recovered, but in other states, the entangled ones, ~~these~~ this is seen to be decisively misleading ~~at a fundamental level~~. These ideas may remind the audience of the late David Bohm's distinction between implicate and explicate order. I claim to have ~~no~~ given these rather mystical distinction a precise mathematical formulation in terms of the OLOC principle and its violation.

1

p.26 centrali

52 as traditionally conceived

53 evolution

17 ∂– employing

p.15 the ideas of secondary qualities.

7 lines from end, "that of the ~~[illegible]~~ primary qualities).
delete the idea of the secondary

p.27 is fore-warned

p.30 relevant

p.6 Post-modernist

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new corrections 6.12.92
p.7 end of para 1
p.8 line 4
p.11 4 lines from end
p.52 6 lines from end
p.38 5 lines from end Another –
p.54 11 lines from end, for given v.

p.64 1 line from end
– delete sentence
p.53 10 lines from end – "
These ~~[illegible]~~ are certainly
9 lines from end – delete 'again'.

Corrections: Tarner lectures

p.5) [illegible]

p.10 nettle 2 lines from end

p.11 actually - - ordinarily · line 9 · X

p.17 comma, line 6.

p.20 end of page objections of measures ? [illegible] ?

p.21 remove comma. 7 lines from end.

p.22 line 6 what → when → ?

more - or - less lighter ?.

p.23 line 7 comma.

& mid-pages & commas to ~~delete~~ there.

p.25 6 lines from end on → in

p.26 delete reach in line 4 X

3 lines from end delete comma.

p.27 3 lines from end, delete comma.

p.30 line 3 insert comma.

p.31 line 1-3 rearrange commas.

lines 5/6 from end insert commas

and λ → ƛ ×2.

p.32 line 1 λ → ƛ ×2

line 4 - - -

p. TO

p.35 line 2 remote

p36 para 2, line 3 radiation

» end of para 2, Note. p.~~37~~ 57 mark X in Fig 3

p43 4 line perm at contradictional and command

p.45 hierarchy

p47 para 2 ?. needs reworking.

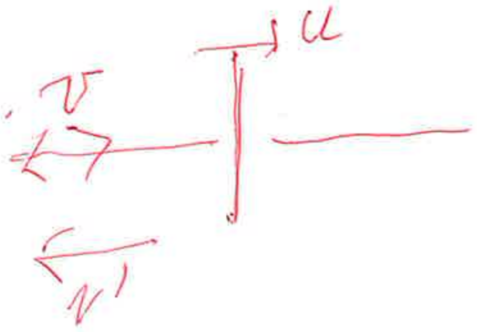
p.48 deduce

p.50 everything line 1
line 6, para 2, command.
Schrödinger para 2, line 10.

p.51 para 2, line 3 of.

p.55 para 1 needs reworking?

iM



$v+u$

$v-u$